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EXAMINER	
LIN, KELVIN Y	

ART UNIT	PAPER NUMBER
2142	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/976,543	GRABARNIK ET AL.	
	Examiner	Art Unit	
	Kelvin Lin	2142	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 February 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-29* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-29* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Detailed Action

Response to Arguments

1. Applicant's arguments with respect to claims 1-29 have been considered but they are moot in view of the new ground(s) of rejection.

2. Applicant argues that the event graph of Mishra is not an event relationship network that can be used to construct one or more correlation rules for use by a correlation engine in an event management system.

   The Office respectively disagrees.

   Mishra teaches the rule creation, in Page 57, the algorithm compile-event, if the rule has a contingency plan, the algorithm first defines trees corresponding to rule event, then modify action part of the original rule, after that it creates Rule-b. From the algorithm, it teaches the tree construction (the event relation graph, see page 58, first paragraph), and from the tree, it creates Rule-b. That proves the algorithm can generate rules from the tree.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claims 1,3 and 16 are rejected under 35 USC 103(a) as being unpatentable over Mishra D., (SNOOP: An Event Specification Language for Active Database System, Thesis from U. of Florida, 1991) in view of Yoshida (US Patent 6006213).

2. Regarding claim 1, Mishra teaches a computer-based method (Mishra, P.57, l. 1-3, event compiler with the algorithm) for use in accordance with an event management system, the method comprising the steps of:

- automatically generating one or more event relationship network from event data, wherein an event relationship network comprises a graphical representation wherein nodes representing events and links connecting correlated nodes (Mishra, Pg.57, l.2-3, 6, Pg.58, l.2-8, compiler converts the event expression in the input and building the graph, the event graph comprises the nodes represent composite events and link represent the path send to the nodes); and

Mishra discloses the automatically generating the event relationship network from event data, he fails to mention the utilization of the event graph to construct the correction rules.

However, Yoshida teaches:

- utilizing the one or more generated event relationship networks to construct one or more correlation rules for use by a correlation engine in the event management system (Yoshida, col.2, l.45-49, in

which the extract patterns corresponds to the event graph, and the conversion into rules for high speed operation (correlation engine)).

It would have been obvious to one ordinary skilled in the art at the time the invention was made to include the teaching of Yoshida for correlation rule used by the correlation engine.

The motivation would be for Mishra to combine with Yoshida is to achieve the extracting a set of patterns frequently appearing in the graph, evaluating the extracted pattern based on the resulting graph size reduction, and outputting a pattern having a good evaluation result (Yoshida, col.1, l.60-65).

3. Claims 2,and 15 are rejected under 35 USC 103(a) as being unpatentable over Mishra D., in view of Yoshida and further in view of Babson et al., (US Patent No. 5345380).

Mishra, and Yoshida teach the event graph generation automatically, and utilize the correlation rule for the correlation engine, but lack of the teaching of human review prior to utilize the event graph.

However, regarding 2, Babson teaches further discloses the method of claim 1, further comprising the step of subjecting the one or more generated event relationship networks to human review prior to utilizing the one or more generated event relationship networks to construct the one or more correlation rules (Babson, col.2, l. 64-67, col. 3, l.1-10, in which the presenting the customer with a plurality of type of nodes, receiving from the customer indication of desired relationships between the desired nodes).

It would have been obvious to one ordinary skilled in the art at the time the

invention was made to include the teaching of Babson for human review prior to correlation engine.

The motivation would be for combining Mishra, and Yoshida to present the event graph to human review to receive from the customer values for parameters to be used with the desired nodes; and construction of a graphical representation of the desired nodes; and to provide the desired service. (Babson, Abstract, col.3 ,l.5-9)

4. Regarding claim 3, Mishra further discloses the method of claim 1, wherein, when one or more previously generated event relationship networks are available, the step of automatically generating one or more event relationship networks comprises:

- obtaining one or more previously generated event relationship networks (Mishra, Pg. 57, l. 10, read rule-definition corresponds to the obtaining the previous event graph);
- validating the one or more previously generated event relationship networks by removing any nodes or links included therein that are incorrect for a particular application context (Mishra, Pg. 57, l.12, define corresponds to the rule event1 and rule-event2, and modify part of the original rule);
- completing the one or more previously generated event relationship networks by adding any nodes or links thereto that are missing for the particular application context (Mishra, Pg. 57, l.18, build-tree corresponds to the completing the event graph);

- outputting the one or more validated and completed event relationship networks as the one or more event relationship networks used to construct the one or more correlation rules (Mishra, Pg. 57, l.14,& l.20, in which the create rule and merge it in the event forest corresponds to the outputting and completed event graph).

5. Claims 4-7, 11,13, 17-20, 24, and 26 are rejected under 35 U.S.C 103(a) as being unpatentable over Mishra in view of Yoshida, and further in view of Yemini et al., (US Patent 6249755).

6. Regarding claims 4, Mishra, and Yoshida differ from the claimed invention in that Mishra does not disclose the statistical correlation analysis. However, Yemini further discloses the method of claim 3, wherein the validating and completing steps utilize a statistical correlation analysis (Yemini, col.13, l.10-20).

It would have been obvious to one ordinary skilled in the art at the time the invention was made to include the teaching of Yemini for event correlation analysis by using graphic model (Yemini, col.17, l.40-50 col.24, l.29-37).

The motivation would be for combining Mishra and Yemini is to execute computer code efficiently determining problem events from observable symptoms. (Yemini, Abstract, col.7, l.64-67)

7. Regarding claim 5, Yemini further discloses the method of claim 4, wherein the statistical correlation analysis utilizes pairwise correlation analysis, wherein correlation between a pair of events is measured in accordance with one or more

statistical measurements (Yemini, col.17, l.59-65).

8. Regarding claim 6, Yemini further discloses the method of claim 3, wherein the validating step comprises, for a particular event relationship network, determining that links in the event relationship network have a confidence level not less than a given threshold (Yemini, col.25, l.9-11).

9. Regarding claim 7, Yemini further discloses the method of claim 3, wherein the validating step, for a particular event relationship network, comprises:

- splitting the event relationship network into correlation paths (Yemini, col.19, l.23-33, in which the classifies corresponds to split);
- for every correlation path, removing a node that has the least number of correlated nodes associated therewith until every node is fully correlated with every other node (Yemini, col.25, l.9-13); and
- merging correlation paths into one or more event relationship networks such that every path in a resulting event relationship network has every node fully correlated with every other node in the path (Yemini, col.17, l.59-65).

10. Regarding claim 11, Yemini further discloses the method of claim 1, wherein the event data is obtained from an event log representing historical events associated with a particular system being managed by the

event management system (Yemini, col.11, l.32-36, col.24, l.57-67, col.25, l.1-8).

11. Regarding claim 13, Yemini further discloses the method of claim 1, wherein the event data is preprocessed prior to use in generating the one or more event relationship networks by removing at least a portion of any redundant events (Yemini, col.8, l.7-10).

12. Claims 8-10,12, 21-23 and 25 are rejected under 35 U.S.C 103(a) as being unpatentable over Mishra in view of Yoshida, in view of Yemini et al., and further in view of Bettini et al., (Title: Testing complex temporal relationship involving multiple granularities and its application to data mining, 1996 ACM).

As mentioned above, Mishra, Yoshida, and Yemini disclose the limitations of event relationship network, but fail to teach the mining pattern.

13. However, regarding claim 8, Bettini further discloses the method of claim 1, wherein, when one or more previously generated event relationship networks are not available, the step of automatically generating one or more event relationship networks comprises:

- mining patterns from the event data (Bettini, page 74, l.32-50, in which the mining process (mining pattern) derived from event structure (event data) is effective);
- utilizing the mined patterns to construct the one or more event relationship networks (Bettini, page73, figure 2));

- outputting the one or more event relationship networks constructed from the mined patterns as the one or more event relationship networks used to construct the one or more correlation rules (Bettini, page 74, l.3-5, step 2 gives a general rule to reduce the length of the input event..).

It would have been obvious to one ordinary skilled in the art at the time the invention was made to include the teaching of Bettini for obtaining data mining structure.

The motivation would be for combining Mishra, Yoshida, Yemini and Bettini is to process data mining in the procedure and find the temporal patterns, i.e. instantiations of the variables in the structure.

14. Regarding claim 9, Bettini further discloses the method of claim 8, wherein the constructing step utilizes a statistical correlation analysis to mine patterns (Bettini, page 71, theorem 1, l.30-32 the event X0 occurrence between month in a year is a statistical correlation analysis).

15. Regarding claim 10, Bettini further discloses the method of claim 8, wherein the statistical correlation analysis utilizes pairwise correlation analysis, wherein correlation between a pair of events is measured in accordance with one or more statistical measurements (Bettini, figure 1).

16. Regarding claim 12, Bettini further discloses the method of claim 1, wherein the one or more event relationship networks comprise annotations relating to statistical correlation between nodes (Bettini, page 71, figure 1,the annotation on the link between nodes related to statistical correlation).

17. Regarding claims 14, 16, 27 have similar limitations as claim 1. Therefore, claims 14,16, 27 are rejected for the same reasons set forth in the rejection of claims 1.

18. Regarding claim 15 has similar limitations as claim 2. Therefore, claim 15 is rejected for the same reasons set forth in the rejection of claim.

19. Regarding claims 17-20, 24, and 26 have similar limitations as claims 4-7, 11,and 13. Therefore, claims 17-20, 24, and 26 are rejected for the same reasons set forth in the rejection of claims 4-7, 11 and 13.

20. Regarding claims 21-23, and 25 have similar limitations as claims 8-10, and 12. Therefore, claims 21-23, and 25 are rejected for the same reasons set forth in the rejection of claims 8-10, and 12.

21. Claims 28, and 29 are rejected under 35 USC 103(a) as being unpatentable over Mishra D., in view of Tenev (US Patent 6108698).

Mishra discloses the automatically generating the event relationship network from event data, Mishra does not specifically disclose to compute a first correlation metric and second correlation metric.

However, Regarding claim 28, Tenev further discloses the method of claim 1, further wherein automated generation of at least one of the one or more event relationship networks comprises use of an automated pairwise statistical correlation procedure which is configured to compute a first correlation metric and a second correlation metric, the second correlation metric being representative of a correlation between events that is stronger than a correlation between events represented by the first correlation metric (Tenev, col.9, l.32-45).

Because knowing that the directed graph data structure is relevant to the rules performed by the grapher, it would have been obvious to use the directed graph data structure in the Mishra's algorithm. Therefore, the claimed invention would have been obvious to one of ordinary skill in the art at the time of the invention.

22. Regarding claim 29, Tenev further discloses the method of claim 1, further wherein automated generation of at least one of the one or more event relationship networks comprises specifying an event data window within which event data is considered (Tenev, col.13, l.28-39).

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action, Accordingly, **THIS ACTION IS MADE FINAL.** See MEPE 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first replay is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE MONTH shortened statutory period, then the shortened statutory period will expire on the date advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTH from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kelvin Lin whose telephone number is 571-272-3898. The examiner can normally be reached on Flexible 4/9/5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew Caldwell can be reached on 571-272-3868. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

5/21/06
KYL

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